

A self sealing vessel assembly for high pressure microwave assisted chemistry is disclosed. The vessel assembly includes a polymeric cylinder and a circular polymeric cap for the cylinder, the cylinder being closed at one end and open at the other end to receive the cap. The open end of the cylinder has a lip that is beveled inwardly from the open end, and the circular polymeric cap has a beveled lower edge that engages the beveled lip when the cap is placed upon the polymeric cylinder. For high pressure applications, a choke cylinder depends from the beveled lower edge of the cap, and has an outer diameter substantially the same as the inner diameter of the polymeric cylinder so that the choke provides a self sealing mechanism for the cylinder as pressure from a chemical reaction increases within the cylinder. A composite sleeve surrounds the polymeric cylinder, and includes at least one wound fabric layer in which the winding is selected from the group consisting of filaments and yarns. A supporting frame extends along the cylinder and across the lid and across the closed end of the cylinder, and prevents the lid from being displaced from the cylinder when pressure is generated inside of the vessel.

## Figures